UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

SECURITIES AND EXCHANGE COMMISSION, Plaintiff, v. TERRAFORM LABS, PTE. LTD. and DO HYEONG KWON, Defendants.	Civil Action No. 1:23-cv-01346-JSR Hon. Jed S. Rakoff

**MEMORANDUM OF LAW IN SUPPORT OF DEFENDANTS'
MOTION TO EXCLUDE THE OPINIONS OF PROF. BRUCE MIZRACH**

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Defendants Terraform Labs Pte LTD. and Kwon Do Hyeong ("Defendants") respectfully submit this memorandum of law in support of their motion to exclude the opinions of Prof. Bruce Mizrach that have been offered by the Securities and Exchange Commission ("SEC").

INTRODUCTION

Prof. Mizrach purports to opine on the "price impact" allegedly caused by the Trading Firm's trading of UST on May 23, 2021 and opines that but for the Trading Firm's trading, UST would have lost its peg on May 23, 2021 and not recovered back to $1.00. The SEC offers Prof. Mizrach's opinions to support its allegation that the Trading Firm's trading was the sole cause of the May 2021 repeg and that Defendants committed fraud by failing to disclose that alleged fact. But when a proposed expert's models cannot, as a matter of science, do what the expert tries to use them for, his opinions must be excluded. *See, e.g., Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997) ("A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered" to permit admission); *City of Providence, Rhode Island v. Bats Glob. Markets, Inc.*, No. 14 Civ. 2811, 2022 WL902402, *8-10 (S.D.N.Y. Mar. 28, 2022) (Furman, J.) (excluding proposed expert's testimony in relevant part because there was too large an analytical gap between the expert's methods and his conclusions).

Prof. Mizrach's opinions suffer from this problem for multiple reasons. Prof. Mizrach's analysis is conceptually flawed and does not offer a reliable basis for his opinions regarding the "but-for" price of UST on May 23, 2021. Assessing the validity or invalidity of such a hypothetical proposition requires a model of how the market would have behaved in the absence of the Trading Firm's trading. Yet Prof. Mizrach's methodology does not even attempt to estimate how other market participants would have traded or how UST prices would have moved without the Trading Firm's trading. His analysis also fails to account for the extent to which other market participants' trading contributed to UST re-pegging.

Prof. Mizrach's analysis is also methodologically flawed. It is premised on a number of speculative assumptions that are unsupported by empirical evidence. Correcting for each of these flawed assumptions, even individually, substantially changes Prof. Mizrach's price impact estimates, which demonstrates that his analysis is not sufficiently reliable to be admissible. As a

result of the multiple flaws, Prof. Mizrach's model yields unreliable and economically nonsensical results: It implies, for example, that but for the Trading Firm's trading, the price of UST would have been *negative, even though Prof. Mizrach concedes that UST could not have a negative price*.

Prof. Mizrach also offers no evidence to support his assertions regarding the UST/LUNA mint-and-burn mechanism being ineffective. His own data shows that the Trading Firm engaged with the mint-and-burn mechanism and that its trading through that mechanism was profitable.

Finally, Prof. Mizrach's opinion that the 2022 de-peg demonstrated the 2021 re-peg was the result of the Trading Firm's trading likewise has no reliable basis. He provides no analysis of the causes of the 2022 de-peg and fails to recognize the different market environments that were present during the 2021 and 2022 de-pegging events.

Prof. Mizrach's analyses cannot reliably measure the price impact of the Trading Firm's May 23, 2021 trading, let alone a "but for" price, s*ee* Ex. A, Expert Rep. of T. Hendershott (Sep. 28, 2023) ("Hendershott Report") ¶¶ 52-59, because his proposed analysis is so conceptually and methodologically flawed that it cannot be fixed. His methodology is the epitome of the type of created-for-litigation expert theories that courts routinely exclude. *See Nemes v. Dick's Sporting Goods, Inc.*, No. 17-CV-1688 (NSR), 2019 WL 3982212, at *13 (S.D.N.Y. Aug. 23, 2019).

Because Prof. Mizrach's opinions are inadmissible under *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993) and Fed. R. Evid. 702, they must be excluded.

STANDARD OF REVIEW

Fed. R. Evid. 702 provides that:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

(a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;

(b) the testimony is based on sufficient facts or data;

(c) the testimony is the product of reliable principles and methods; and

(d) the expert has reliably applied the principles and methods to the facts of the case.

The Second Circuit has "distilled Rule 702's requirements into three broad criteria: (1) qualifications, (2) reliability, and (3) relevance and assistance to the trier of fact." *In re*

Namenda Indirect Purchaser Antitrust Litig., No. 1:15-cv-6549, 2021 WL 2403727, at *7 (S.D.N.Y. June 11, 2021); *see also Nimely v. City of New York*, 414 F.3d 381, 396-97 (2d Cir. 2005). "The party proffering the expert's opinions 'has the burden to establish the [Rule 702] admissibility requirements, with the district court acting as a 'gatekeeper' to ensure that the 'expert's testimony both rests on a reliable foundation and is relevant to the task at hand.'" *Id.* A court is not required "to admit opinion evidence that is connected to [the facts] only by the ipse dixit of the expert," or where "there is simply too great an analytical gap" between the data and the opinion proffered. *Joiner*, 522 U.S. at 146.

ARGUMENT[1]

I.   PROF. MIZRACH'S OPINIONS ARE UNRELIABLE

When assessing whether a proposed expert's opinions are sufficiently reliable to be admitted as evidence, the Court "should consider the indicia of reliability identified in Rule 702, namely, (1) that the testimony is grounded on sufficient facts or data; (2) that the testimony 'is the product of reliable principles and methods; and (3) that 'the witness has applied the principles and methods reliably to the facts of the case.'" *Amorgianos v. Nat'l R.R. Passenger Corp.*, 303 F.3d 256, 265 (2d Cir. 2002) (quoting Rule 702). Prof. Mizrach's proposed opinions fail all three aspects of the reliability analysis.

A.   Prof. Mizrach's Proposed Methodology Is Conceptually Flawed

The basis for Prof. Mizrach's opinions, particularly his "price impact analysis," is a Vector Autoregression ("VAR") methodology which he claims to base on an allegedly similar methodology articulated by Joel Hasbrouck in "Measuring the Information Content of Stock Trades," *The Journal of Finance* 46, no. 1 (1991) ("Hasbrouck") at p. 179-207.[2] *See* Ex. B, Mizrach Dep. (Sep. 22, 2023) ("Mizrach Tr.") at 44:10-15. Hasbrouck's methodology requires (i)

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[1] Because the conceptual and methodological flaws in Prof. Mizrach's opinions are sufficient to require exclusion of his opinions under *Daubert*, Defendants are not here asserting lack of qualification. In the event that the Court does not strike Prof. Mizrach's opinions, Defendants reserve the right to challenge his qualifications in advance of trial.

[2] Hasbrouck is available here: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=175830f91b916ef57aa54474b b0c676874ddb9a6.

a series of mid-quotes (which represent the price of the asset at any given time and can be used to calculate the return of that asset from one period to the next) and (ii) a series of market transactions that can be characterized as representing the direction of the trading—positive when buyer-initiated and negative when seller-initiated—and taking the values of 1 (buy) and -1 (sell). Hendershott Report ¶ 61. Hasbrouck's methodology then estimates the extent to which an unpredicted trade is correlated with further price movements. *Id*. ¶ 61. Using an "impulse response function" ("IRF") that he derives, Prof. Mizrach then tries to estimate "the impact [that] one additional buy or sell purchase [has] on the market price" of UST. *See id*. ¶ 61; Ex. C, Expert Report of Prof. B. Mizrach (Sep. 7, 2023) ("Mizrach Report") at p. 32.

But there is a deep conceptual flaw in what Prof. Mizrach does, because Hasbrouck's model was designed to measure the information content of asset trades, not whether the asset price would have moved more or less if the trading being studied had not occurred. *See* Hendershott Report ¶¶ 65-71; Hasbrouck at p. 183 & 185. Put differently, whereas Hasbrouck's methodology can be used to study what price changes the Trading Firm's May 23, 2021 trading might have *predicted*, Prof. Mizrach tries to use that methodology to determine what prices that trading *caused*, for which the methodology cannot be used. *See* Hendershott Report ¶¶ 66-67. Prof. Mizrach's conceptual error is thus a version of one of the most common mistakes made when incorrectly using regression models (of which a VAR is just a more complex example)—confusing correlation with causation. *See* Daniel L. Rubinfeld, *Reference Guide on Multiple Regression*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE: THIRD EDITION (2011) 305, 309 ("Rubinfeld").

The SEC alleges (Amended Complaint, Doc. No. 25 ("AC") ¶¶ 7 & 158) and Prof. Mizrach opines (Mizrach Report at p. 2 & 19) that the Trading Firm's UST purchases on May 23 were the actual cause of UST repegging in May 2021. But elementary science and law mandate that causality cannot be inferred just from data analysis—a proposed expert must base causation opinions on an underlying causal theory that explains the relationship between the variables that are studied, and even with such a model causation can "never" be inferred directly because the causal relationship must be tested empirically. *See* Rubinfeld at p. 311-312. Failure to properly

design, specify, and test a regression model is fatal, and courts regularly strike opinions based on such regressions.[3]

These are precisely the types of errors Prof. Mizrach made in trying to apply the Hasbrouck methodology to the Trading Firm's trading data. *See* Hendershott Report ¶¶ 72-100 & Ex. E, Hendershott Decl. in Support of Defs. Mot. For Summary J. (Oct. 27, 2023) ("Hendershott Decl.") ¶¶ 7-26. And as Prof. Hendershott demonstrated—and Prof. Mizrach did not rebut—the flaws that Prof. Mizrach introduced into his model were easy to identify (indeed, the fact that Prof. Mizrach neither calculated, nor even discussed, the potential error rate of his model is itself fatal under *Daubert*, *see Amorgianos*, 303 F.3d at 266).

First, although Prof. Mizrach claimed that his methodology accounted for trading by entities other than the Trading Firm by including the mid-quotes (Mizrach Tr. 94:16-21), he provided no evidence supporting that claim. Prof. Hendershott readily demonstrated that it was incorrect, and that Prof. Mizrach's model neither included nor controlled for non-Trading Firm trading. Hendershott Report ¶ 73 & Hendershott Decl. ¶¶ 7-22.

Second, Prof. Mizrach claimed that trades made in certain "categories" of the Trading Firm's trades are consistent with the SEC's theory of intervention. *See* Mizrach Report at p. 18-23. But Prof. Hendershott demonstrated, by means of analyses of the same internal Trading Firm data available to Prof. Mizrach (which Prof. Mizrach could have analyzed, but did not), that trades made by the Trading Firm in other "categories" are consistent with non-directional trading by the Trading Firm and are thus inconsistent with and not explainable by Prof. Mizrach's opinions (and thus the SEC's theory of the case). *See* Hendershott Report ¶¶ 75-81 & Hendershott Decl. ¶¶ 7-14.

Third, and again using the same Trading Firm data used by Prof. Mizrach, Prof. Hendershott analyzed the Trading Firm's *directional* trades—the trades the SEC contends

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[3] *See, e.g., City of Tuscaloosa v. Harcros Chemicals, Inc*., 158 F.3d 548 (11th Cir. 1998) (striking plaintiffs' regression-based *expert* testimony and granting summary judgment to defendants); *American Booksellers Ass'n, Inc. v. Barnes & Noble, Inc*., 135 F. Supp. 2d 1031, 1041 (N.D. Cal. 2001) (striking model that contained "too many assumptions and simplifications that are not supported by real-world evidence").

"actually" restored the UST peg—in the context of the overall market. That analysis—which Prof. Mizrach does not challenge—demonstrates that the majority of the Trading Firm's directional UST purchases occurred *after* large UST price movements had already occurred, were made through passive orders as opposed to active orders, and represented a small share of the active buy volume on KuCoin on May 23, 2021. *See* Hendershott Report ¶¶ 82-100; Ex. D, Mizrach Expert Report ("Mizrach Rebuttal") at p. 6; Hendershott Decl. ¶ 18.

Even more egregiously, Dr. Mizrach then, without any supporting analyses or clearly identified assumptions, extrapolates his assumed causal impact to an opinion on what the but-for price of UST would have been absent the Trading Firm's trading. Rather than identifying, articulating, and testing the assumptions necessary to extrapolate an estimated correlation to a but-for price, Dr. Mizrach repeatedly relies on baseless assertions about the Trading Firm's "unique" and "real" motives. He claims that "others did not join" the Trading Firm in purchasing UST due to a lack of such incentives. Not only is this demonstrably false (other entities *did* join the Trading Firm in purchasing UST), but his repeated reliance on what he assumes are the real motives of the Trading Firm has no reliable or scientific basis. The fact that Dr. Mizrach *chose* his methodology based on assumptions of the Trading Firm's intent, motives, and supposed "goals" is yet another reason why his analysis fails under *Daubert*. *Compare* Mizrach Rebuttal pp. 3, 5, 6 ("While this type of analysis could make sense in other contexts, since [the Trading Firm]'s goal was to restore the peg, it does not make sense [here].") *with, e.g., In re Rezulin Products Liability Litig.*, 309 F. Supp. 2d 531, 546 (S.D.N.Y. 2004) (Kaplan, J.) (excluding expert testimony where "opinions [of expert witnesses] on the intent, motives, or states of mind of corporations, regulatory agencies and others have no basis in any relevant body of knowledge or expertise"); *Taylor v. Evans,* No. 94 Civ. 8425 (CSH), 1997 WL 154010, at *2 (S.D.N.Y. April 1, 1997) (excluding similar expert testimony as "musings as to defendants' motivations [that] would not be admissible if given by any witness—lay or expert."); *DePaepe v. General Motors Corp.,* 141 F.3d 715, 720 (7th Cir. 1998) (trial court erred by allowing expert to testify as to why General Motors had reduced the amount of padding in its automobile sun visors; expert "lacked any scientific basis for an opinion about the motives of GM's designers").

Why are these conceptual errors important from a *Daubert* perspective? Because the core of Prof. Mizrach's opinions, and the SEC fraud allegations they are intended to support, is that "manual" or "interventional" trading by the Trading Firm was the sole cause of the May 2021 UST repeg. Mizrach Report at 20, 23; Mizrach Tr. 172:21-173:19. Despite that, Prof. Mizrach neither differentiated between the types of trades that the Trading Firm appeared to have engaged in for arbitrage or other non-directional trading strategies and potential "interventional" or directional trades, nor explained why the non-directional strategies should be included in the analysis of the Trading Firm's supposed trading impact given the SEC's allegations in the Amended Complaint. Indeed, Prof. Mizrach conceded in his deposition that the Trading Firm's non-directional trading likely had a negative impact on the price of UST on May 23, 2021. *See* Mizrach Tr. 147:18-21 & 150:4-17.

But the conceptual problems with Prof. Mizrach's model are even worse than the foregoing indicates. *First*, after reaching a "local" low price of $0.902 at 9:10:27 CDT, the price of UST rebounded to $0.952 without any "interventional" UST purchases by the Trading Firm. *See* Hendershott Report ¶ 95. Prof. Mizrach does not take this into account at all. This is precisely the type of model design validation that is necessary for even a basic regression analysis to be admissible, *see* Rubinfeld at 311-312, let alone a complex regression such as a VAR.

Second, Hendershott Report Figure 13 shows a period of significant UST price increase (from $0.92 to just over $0.98), but the vast majority of purchases on KuCoin during this period of time were not made by the Trading Firm. *See* Hendershott Report ¶¶ 97-98, Figure 15. Prof. Mizrach's opinions neglect the fact that the majority of the UST price change during this period occurred while the Trading Firm was not actively trading. *See id.*

Third, Prof. Mizrach's opinions cannot account for the price of UST during the period from May 24-25, 2021, when the peg was re-established. If the theory that the Trading Firm "purchas[ed] large quantities of UST … continuing through May 27 in an effort to restore the peg" (AC ¶ 162) was true, one would expect the Trading Firm's trading to account for a substantial portion of the buy-side trading volume during this window. But its active purchases were just 2% of the KuCoin active trading volume during this period, and Prof. Mizrach offers no explanation

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for how such a small share of active volume could be consistent with the allegation that the Trading Firm's purchases were the "true" cause of the UST re-peg. *See* Hendershott Report ¶ 100.

These conceptual errors, which even a novice expert candidate reading the REFERENCE MANUAL ON SCIENTIFIC EVIDENCE would not make, on their own render Prof. Mizrach's opinions inadmissible under *Daubert*.

B.   Prof. Mizrach's Analyses Are Not The Product of Reliable Principles and Methods

Prof. Mizrach's opinions also suffer from methodological flaws, including a reliance on unstated, untested, speculative, and unsupported assumptions.   At least four particularly consequential assumptions are unsupported by empirical evidence or data: that the Trading Firm's bookstacker_UST trades (which Prof. Mizrach assumes are interventional) have the same price impact as the Trading Firm's other trades, that the Trading Firm's passive trading had the same price impact as its active trading, that Prof. Mizrach's *per-trade* impulse response estimates can be scaled based on the average size of all the Trading Firm's trades as a way to estimate the price impact of the Trading Firm's net purchase *volume*, and that the results of his analyses make any economic sense. But when each of these assumptions is tested empirically using the data available to Prof. Mizrach, they are unsupported by the data, which shows that Prof. Mizrach's opinion is neither robust nor reliable. This is critical, because proposed expert opinions based on flawed assumptions must be excluded. *See Bank of Am., N.A. v. Bear Stearns Asset Mgmt.*, 969 F. Supp. 2d 339, 358 (S.D.N.Y. 2013); *Johnson Elec. N. Am. Inc. v. Mabuchi Motor Am. Corp.*, 103 F. Supp. 2d 268, 284 (S.D.N.Y. 2000).

First, the Trading Firm's bookstacker_UST trades did not have the same price impact as the Trading Firm's other trades. Prof. Hendershott performed the same analysis, using the same data, as Prof. Mizrach, except he separated the Trading Firm's trades into bookstacker_UST and non- bookstacker_UST categories. That single change showed that the bookstacker_UST trades— which contributed entirely to the Trading Firm's directional position, and were the trades Prof. Mizrach assumed to be "interventional"—had less price impact than the non- bookstacker_UST trades. *See* Hendershott Report ¶¶ 103-109. This necessarily means that Prof. Mizrach's model

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overestimates the alleged "total price impact" that Prof. Mizrach claims is solely due to the Trading Firm's trading and is thus not reliable.

Second, Prof. Mizrach assumes that active trades have the same price impact as passive trades (essentially assuming what he is trying to prove and, by extension, assuming what the SEC bears the burden of proving). This is not an esoteric issue: Testing for different price impacts of active and passive trades is common in academic literature. *See* Jonathan Brogaard, Terrence Hendershott, and Ryan Riordan, "Price Discovery Without Trading: Evidence from Limit Orders," *The Journal of Finance* 74, no. 4 (2019): 1621-1658; Jonathan Brogaard, Terrence Hendershott, and Ryan Riordan, "High-Frequency Trading and Price Discovery," *The Review of Financial Studies* 27, no. 8 (2014): 2267-2306; Mark D. Griffiths et al., "The costs and determinants of order aggressiveness," *Journal of Financial Economics* 56, no. 1 (2000): 65–88, p. 66. And Prof. Mizrach knows that this is a testable issue. *See* Mizrach Tr. 166:7-166:10. Rather than performing an empirically sound and unbiased examination of the data, Prof. Mizrach actively chose a model that *would not* test the difference, claiming that "it would not make sense" to, because "[the Trading Firm]'s *goal* was to restore the peg." *See* Mizrach Rebuttal p. 6. Choosing a methodology based on beliefs of "intent" or "goals" is, alone, basis to exclude Prof. Mizrach's opinions.

When Prof. Hendershott adjusted Prof. Mizrach's model to account for whether Trading Firm trades were active or passive (but made no other changes), the results were clear, unambiguous, and consistent with the academic literature that Prof. Mizrach failed to cite: the Trading Firm's passive orders were associated with negative price impacts on UST and its active orders were associated with positive price impacts on UST. *See* Hendershott Report ¶¶ 110-116. This error is especially important in light of how much of the bookstacker_UST trading was passive. By not separating the Trading Firm's active and passive trading *even though the data he had enabled him to do so*, Prof. Mizrach assumed that the bookstacker_UST passive trading had the same price impact as the Trading Firm's active trading even though that assumption was easily shown to be unfounded and contradicted by the data in Prof. Mizrach's possession. This is why *Daubert* does not permit experts to assume what they are trying to prove. *See e.g., In re Mirena IUD Prod. Liab. Litig.*, 169 F. Supp. 3d 396, 431-32 (S.D.N.Y. 2016) (concluding that an expert

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opinion was inadmissible where "the conclusions [were] linked to [the] studies only by [the expert's] say-so").

Third, Prof. Mizrach attempts to calculate price impact of the Trading Firm's trades by estimating how many trades the Trading Firm *could* have used to purchase a given amount of UST despite having the data showing how many trades the Trading Firm *actually* used. That is, instead of using the Trading Firm's actual trade data, Prof. Mizrach created hypothetical trade data in order to estimate his total price impact. This is especially odd given that Prof. Mizrach has conducted analyses in his published work in which he has used actual, not estimated, trade volumes. *See* Mizrach Tr. 127:8-20. Prof. Mizrach provides no support from peer-reviewed literature to justify such an approach, and Prof. Hendershott has explained that there is no such support. *See* Hendershott Report ¶ 119.

This single unsupported methodological choice has dramatic repercussions. On the one hand, it results in Prof. Mizrach using an estimate that is *ten times* larger than the number of trades the Trading Firm actually made. *See* Hendershott Report ¶¶ 119-120. That unnecessary and unexplained ten-fold difference flows through the entirety of Prof. Mizrach's opinions, and yet Prof. Mizrach admitted during his deposition that his estimated trade counts are meaningless. *See* Mizrach Tr. 103:2-104:2; Hendershott Report ¶ 122. Defendants are unaware of a court finding that a proposed expert who used estimated data whose meaning he could not explain when he had actual data available to him satisfied *Daubert*. *Cf.* Rubinfeld at 317 ("the expert should be prepared to explain why any chosen method … was more suitable than the alternatives"); *Bricklayers & Trowel Trades Int'l Pension Fund v. Credit Suisse Sec. (USA) LLC*, 752 F.3d 82, 89 (1st Cir. 2014) (when constructing a benchmark statistic, the regression analyst may not "cherry-pick" the time-frame or data points so as to make her ultimate conclusion stronger).

But even that does not fully address the problem with this methodological flaw, because Prof. Mizrach's approach cannot actually control for the effect of trading volume. *See* Hendershott Report ¶ 121. In other words, Prof. Mizrach asks this Court to allow into evidence an opinion based on a methodological choice that is inconsistent with his prior work, that he cannot explain

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the meaning of or reason for, that inflates his numeric results by a factor of ten, and that cannot do what he claims he needs it to do. That is the very definition of inadmissible opinion.

C. Prof. Mizrach Failed to "Sanity Test" His Economic Modeling Against Actual Real-World Data

Finally, Prof. Mizrach made no attempt to examine the results of his opinions against the real-world data his opinions purport to explain—in other words, he did not conduct a sanity check. The Supreme Court has identified a number of factors bearing on reliability that district courts may consider, which include whether a theory or technique "*can be (and has been) tested*," *Daubert*, 509 U.S. at 593 (emphasis added); *Amorgianos*, 303 F.3d 256 at 266.[4]

Prof. Mizrach's reliance on speculative and unsupported assumptions, as well as his failure to properly account for other entities' trading, results in price impact estimates that are economically nonsensical. In short, Prof. Mizrach's models "fail the test," as Prof. Hendershott has identified a number of real-world red flags that should have alerted Prof. Mizrach to the fact that his analysis inevitably yields absurd results. For example, Prof. Hendershott shows how the inability of Prof. Mizrach's model to control for trade volumes further highlights the flaws in his methodology. To illustrate this point, Prof. Hendershott explains that Prof. Mizrach's price impact analysis yields the same results regardless of the size of the trades at issue. Hendershott Report ¶¶ 121. Taking this point to the extreme, if all of the Trading Firm's trades were 100 times larger (or smaller) than they were at the time of the 2021 depeg, and the Trading Firm's net UST position had been 1.516 billion (or .15 million), rather than 15.16 million, Prof. Mizrach's price impact analysis would yield *the exact same result*—an absurdity, because it would mean that the price impact estimates from Prof. Mizrach's analysis would be the same between two distinct scenarios with a 10,000 fold difference in trade sizes and trade volumes. *Id.; cf. Lippe v. Bairnco Corp.,* 99 Fed.Appx. 274, 279 (2d Cir. 2004) (inconsistent results are an "indicia of unreliability" in an expert's methodologies, and this principle is clearest in the context of inconsistent results produced

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[4] An expert's methodology is to be assessed step-by-step, and "it is critical that an expert's analysis be reliable at every step." *Amorgianos*, 303 F.3d at 267. "[A]ny step that renders the analysis unreliable under the Daubert factors renders the expert's testimony inadmissible." *Id.* (emphasis omitted).

by the same methodology); *Louis Vuitton Malletier v. Dooney & Bourke, Inc.,* 525 F.Supp.2d 558, 569 (S.D.N.Y. 2007) (finding "unexplained inconsistency between the results" produced by two iterations of the same methodology to be a basis for exclusion). Again, this is why using the actual trade count—as opposed to a hypothetical average imagined by Prof. Mizrach—is critical to the analysis. *See Reed Const. Data Inc. v. McGraw-Hill Companies, Inc.* 449 F.Supp.3d 385, 400-01 (S.D.N.Y. September 24, 2014) (to be admissible, a regression analysis must control for the "major factors" that might influence the dependent variable). Prof. Hendershott explains that this in fact is a major oversight, because using the actual number of net purchase trades by the Trading Firm, rather than Prof. Mizrach's estimated number, "reduces his price impact estimate tenfold." Hendershott Report ¶ 122.

In another example, Prof. Hendershott highlights how Prof. Mizrach's model again yields an economically absurd result. Prof. Mizrach's report estimated that the Trading Firm's trading resulted in a lower bound price impact estimate of $0.9452, a mid-point price impact estimate of $1.30, and an upper-bound price impact estimate of over $1.60. Hendershott Report ¶ 123. But as Prof. Hendershott points out, the actual price of UST never declined below $0.854 on May 23, 2021, so when the price recovered to $0.99, this was a price change of about $0.14 from the lowest intra-day price point. *Id.* But applying Prof. Mizrach's flawed methodology predicts that the Trading Firm's trading had a mid-point price impact of $1.30, which suggests that, based on Prof. Mizrach's own logic, in the absence of any trading by the Trading Firm at all, the price at the end of the episode would have been approximately -$0.30. *Id.* This is nonsensical, because an asset such as UST cannot have a negative price.[5] *Id.* When asked to explain this real-world absurdity, Prof. Mizrach first replied "I don't know the answer to that," but then later conceded that he was unaware of a time when the trading price of a spot asset (like UST) has ever gone negative, stating that "nothing is coming to mind." Hendershott Report ¶ 125. As Prof. Hendershott explained, "[t]he disconnect between the economic reality of the UST spot market and the results of Prof.

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[5] And of course, applying Prof. Mizrach's upper bound price impact figure of above $1.60 would have yielded an even more deeply negative price, an even greater absurdity. Hendershott Report ¶ 124.

Mizrach's analyses are, alone, enough to draw into question the causal conclusions he reaches based on his model." *Id.*

In yet a third example of a real-world absurdity, Prof. Hendershott applied Prof. Mizrach's model to consider the Trading Firm's trading between the 14:30 and 15:00 UTC. *See* Hendershott Report ¶ 126. Prof. Mizrach observed that during that period "the Trading Firm made 30 purchases of more than 100,000 UST," and purchased a total of approximately 10 million UST. *Id.* Based on his model, Prof. Mizrach would then estimate the Trading Firm's price impact to be nearly $0.62 at that time. *Id.* Yet as Prof. Hendershott observed, during this 30-minute period, the price of UST increased by only $0.03, a twenty-fold difference, further emphasizing the utter lack of reliability of Prof. Mizrach's model. *Id.*

Because Prof. Mizrach failed to sanity-test his analysis with easy to perform basic checks, when he was confronted with this fact at his deposition, he was repeatedly at a loss to explain these issues. A model is only as reliable as its ability to correctly explain real-world phenomena. As Prof. Hendershot states, the presence of so many economically nonsensical results suggests that Prof. Mizrach's theoretical framework is flawed conceptually, or his model implementation is flawed methodologically, or both. Hendershott Report ¶ 128. As these flaws preclude Prof. Mizrach from drawing any conclusions with respect to the Trading Firm's trading and what would have happened in the UST market absent that trading, his opinions are not admissible. *Id.*[6]

II.   PROF. MIZRACH'S TESTIMONY IS NOT RELEVANT TO THE ISSUES IN THIS CASE

Rule 702 requires a determination of whether a proposed expert's testimony will assist the trier of fact, *see Nimely*, 414 F.3d at 397, which "goes primarily to relevance," *Daubert*, 509 U.S.

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[6] In addition, as Prof. Hendershott points out, Prof. Mizrach's opinions regarding arbitrage are also unreliable. *See* Hendershott Report ¶¶ 129-133. Prof. Mizrach offers no empirical evidence for his *ipse dixit* conclusion that because swap fees increased, the arbitrage mechanism became unprofitable. *Id.* ¶ 131. But as Prof. Hendershott explains, the presence of high swap fees does not necessarily preclude the opportunity for profit via the mint-and-burn mechanism. *Id.* In fact, Prof. Hendershott identified relevant transaction records which provide evidence that profitable trading opportunities utilizing the mint-and-burn mechanism *did* exist on May 23, 2021. *See id.* ¶¶ 131-33. In contrast, Prof. Mizrach offers opinions on arbitrage causes and effects, but without any supporting analysis. Here again, the "gap" between Prof. Mizrach's analysis and his causal statements render his opinions inadmissible, *See, e.g., City of Providence, Rhode Island,* No. 14-CV-2811, 2022 WL902402, *8.

at 591. "Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful." *Raskin v. Wyatt Co.*, 125 F.3d 55, 66 n.5 (2d Cir. 1997); *see also Malletier v. Dooney & Bourke, Inc.*, 525 F.Supp. 2d 558, 572-73 (S.D.N.Y. 2007) (excluding expert because expert's methodology did not "fit" the theory of liability). Prof. Mizrach's opinions do not fit this case.

A.   Prof. Mizrach's Proposed Opinions Regarding The 2022 Depeg Events Are Irrelevant, Inadmissible Evidence and Should Not Be Considered

Prof. Mizrach is only offering opinions about what he considers to be the price impact of the Trading Firm's trading on the May 23, 2021 depeg event. Therefore, Prof. Mizrach's opinions regarding the May 2022 depeg event are irrelevant and should be excluded. Although Prof. Mizrach's report contains a purported discussion of similarities between the May 2022 depeg and the May 2021 depeg, that discussion is simply a recitation of purported facts and is therefore inadmissible. A party cannot use a proposed expert to shoehorn evidence into the record that it could not otherwise authenticate or prove admissible.

For example, an expert may not simply serve as a conduit to transmit evidence such as hearsay to the jury. *See U.S. v. Mejia,* 545 F.3d 179, 197 (2d Cir. 2008) ("When an expert is no longer applying his extensive experience and a reliable methodology, *Daubert* teaches that the testimony should be excluded."). Instead, the expert must form his own opinions by applying his or her experience and a reliable methodology to the inadmissible materials. *Id.* at 197. Otherwise, the expert is simply "repeating hearsay evidence without applying any expertise whatsoever," a practice that allows [a party] "to circumvent the rules prohibiting hearsay." *Id.*

Here, Prof. Mizrach's discussion of the 2022 depeg is merely a rote recitation of alleged facts, without any analysis whatsoever. *See* Mizrach Report at p. 4, 24-25, 28-30. The ultimate purpose of this recitation is to benefit the SEC by filling holes in its factual record with purported "expert" statements. Such pseudo-factual statements disguised as expert "analysis" cannot be used to avoid the usual evidentiary requirements to demonstrate authenticity, foundation, hearsay exceptions, and the like, to which percipient witnesses must adhere. Because Prof. Mizrach's "analysis"—more accurately, "discussion"—of the 2022 depeg events contains no application of

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"experience" to a "reliable methodology," Second Circuit precedent requires the Court to strike all of Prof. Mizrach's discussions about the 2022 depeg.

B.   Prof. Mizrach Has No Basis to Claim that the May 2022 De-Pegging Event Serves As "Validation" That the Trading Firm's Trading Caused The 2021 Re-Pegging.

Lastly, to the extent that this Court considers Prof. Mizrach's opinions regarding the 2022 depeg event—and it should not, as discussed above—those opinions are also inadmissible because they are unreliable and based on no analysis. Prof. Mizrach claims that the May 2022 de-pegging "provides further validation that the prior recovery of the price of UST to $1 in May 2021 was not a result of the functioning of that algorithm" because of a "failure of the swap mechanism" to restore and/or prevent the de-pegging in 2022. Mizrach Report, p. 4. But as is the case with his other opinions, he presents no reliable basis for this one.

In fact, Prof. Mizrach offers no analysis at all in support of this claim, while at the same time, the Hendershott Report explains that there are significant factual disconnects between the events of the 2021 depeg and the events of the 2022 depeg, all of which Prof. Mizrach ignores. Among other things:

- Prof. Mizrach fails to account for the vast differences between the market environments of May 2021 and May 2022, during which the market capitalization of UST grew from $2.0 billion in 2021 to $18.6 billion in 2022, and the average daily trading volume on CEXs increased over nine-fold. With this increase in market size, the magnitude and characteristics of the selling pressure that UST faced in 2022 were vastly different than in 2021. *See* Hendershott Report ¶ 136.

- In addition, Prof. Hendershott analyzes that much of the selling pressure with respect to the 2022 depeg event originated from just four wallets. In fact, documents and data produced by one entity in this matter show that it sold 99.9% of its total UST holding (as of May 6, 2022) in one trading day on May 7, 2022. Approximately 45% of its selling happened in one transaction. This indicates that a coordinated effort by a few individuals and entities was at play, unlike the events of the May 2021 depeg. But Prof. Mizrach failed to analyze these sudden, large concentrated transactions and their impact on the 2022 depeg. *See* Hendershott Report ¶¶ 135-151.

- In another example, Prof. Mizrach's thesis is that the only reason the UST peg was restored in 2021, but not in 2022, was because of the supposedly "intervening" trading by the Trading Firm in 2021. But this fails to acknowledge that TFL and LFG spent roughly $*3 billion* in resources—and purchased much more UST (*i.e.*,

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compared to the roughly $15 million net UST purchased by the Trading Firm in 2021) to "intervene" in 2022, albeit without success. Hendershott Report ¶¶ 160-61.

As with his other opinions, Prof. Mizrach's conclusory observations regarding the causes of the depeg events are long on *ipse dixit* and short on analysis. Accordingly, under *Daubert* and its progeny, they must be excluded.

CONCLUSION

As demonstrated above, the opinions offered by Prof. Mizrach suffer from a combination of deep conceptual flaws, inherent methodological flaws, and demonstrably incorrect assumptions (some of which essentially assume what Prof. Mizrach is trying to prove). These flaws render Prof. Mizrach's opinions inadmissible. For all of the foregoing reasons, the Court should exclude the opinions of Prof. Mizrach.

Dated: October 27, 2023

Respectfully submitted,

By: */s/ Douglas W. Henkin*

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<u>**CERTIFICATE OF SERVICE**</u>

I, Douglas W. Henkin, certify that I caused a true and correct copy of the foregoing to be

served on all counsel of record via the Court's ECF system on October 26, 2023.

<div align="right">

/s/ Douglas W. Henkin
Douglas W. Henkin

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